



R-408A

Technical Guidelines

| Physical Properties of Refrigerants | R-408A |
|--|--------|
| Environmental Classification | HCFC |
| Molecular Weight | 87 |
| Boiling Point (1 atm, °F) | -49.8 |
| Critical Pressure (psia) | 641.6 |
| Critical Temperature (°F) | 182 |
| Critical Density, (lb./ft ³) | 30 |
| Liquid Density (70 °F, lb./ft ³) | 66.9 |
| Vapor Density (bp, lb./ft ³) | 0.303 |
| Heat of Vaporization (bp, BTU/lb.) | 96.74 |
| Specific Heat Liquid (70 °F, BTU/lb. °F) | 0.3416 |
| Specific Heat Vapor (1 atm, 70 °F, BTU/lb. °F) | 0.1901 |
| Ozone Depletion Potential (CFC 11 = 1.0) | 0.024 |
| Global Warming Potential (CO ₂ = 1.0) | 3152 |
| ASHRAE Standard 34 Safety Rating | A1 |
| Temperature Glide (°F) (see section 2) | 1 |

Available in the following sizes

R-408A
24 LB. CYLINDER
100 LB. CYLINDER

Pressure-Temp Chart

| Temp (°F) | R-408A (psig) |
|-----------|---------------|
| -40 | 2.8 |
| -35 | 5.1 |
| -30 | 7.6 |
| -25 | 10.4 |
| -20 | 13.5 |
| -15 | 16.8 |
| -10 | 20.4 |
| -5 | 24.4 |
| 0 | 28.7 |
| 5 | 33.3 |
| 10 | 38.3 |
| 15 | 43.7 |
| 20 | 49.5 |
| 25 | 55.8 |
| 30 | 62.5 |
| 35 | 69.7 |
| 40 | 77.4 |
| 45 | 85.6 |
| 50 | 94.3 |
| 55 | 104 |
| 60 | 114 |
| 65 | 124 |
| 70 | 135 |
| 75 | 147 |
| 80 | 159 |
| 85 | 173 |
| 90 | 186 |
| 95 | 201 |
| 100 | 217 |
| 105 | 233 |
| 110 | 250 |
| 115 | 268 |
| 120 | 287 |
| 125 | 307 |
| 130 | 327 |
| 135 | 349 |
| 140 | 372 |

R-408A (R-125/143a/22)
(7 / 46 / 47 wt%)

Replaces: R-502

Applications: Medium and low temperature commercial and industrial direct expansion refrigeration

Performance:

- Similar PT properties across the whole operating range of temperatures
- Slightly higher discharge temp

Lubricant

Recommendation: Compatible with mineral oil, alkylbenzene and polyolester lubricant

Retrofitting: from R-502 page 98
to R-422C page 100



THERMODYNAMIC PROPERTIES OF R-408A

| Temp [°F] | Pressure Liquid [psia] | Pressure Vapor [psia] | Density Liquid [lb/ft ³] | Density Vapor [lb/ft ³] | Enthalpy Liquid [Btu/lb] | Enthalpy Vapor [Btu/lb] | Entropy Liquid [Btu/R-lb] | Entropy Vapor [Btu/R-lb] |
|--------------|------------------------------|-----------------------------|--|---|--------------------------------|-------------------------------|---------------------------------|--------------------------------|
| -60 | 11.2 | 10.9 | 81.70 | 0.2288 | -5.734 | 92.47 | -0.01396 | 0.2320 |
| -55 | 12.8 | 12.5 | 81.21 | 0.2604 | -4.311 | 93.14 | -0.01043 | 0.2306 |
| -50 | 14.6 | 14.3 | 80.72 | 0.2954 | -2.881 | 93.79 | -0.00692 | 0.2293 |
| -45 | 16.7 | 16.3 | 80.22 | 0.3339 | -1.444 | 94.45 | -0.00345 | 0.2280 |
| -40 | 18.9 | 18.5 | 79.72 | 0.3763 | 0.000 | 95.10 | 0.00000 | 0.2268 |
| -35 | 21.4 | 21.0 | 79.21 | 0.4228 | 1.451 | 95.74 | 0.00342 | 0.2257 |
| -30 | 24.1 | 23.7 | 78.70 | 0.4736 | 2.910 | 96.38 | 0.00682 | 0.2246 |
| -25 | 27.1 | 26.6 | 78.18 | 0.5291 | 4.376 | 97.01 | 0.01020 | 0.2235 |
| -20 | 30.3 | 29.8 | 77.65 | 0.5896 | 5.851 | 97.64 | 0.01356 | 0.2225 |
| -15 | 33.9 | 33.3 | 77.13 | 0.6554 | 7.334 | 98.26 | 0.01689 | 0.2215 |
| -10 | 37.7 | 37.1 | 76.59 | 0.7268 | 8.826 | 98.87 | 0.02021 | 0.2206 |
| -5 | 41.9 | 41.3 | 76.05 | 0.8042 | 10.33 | 99.47 | 0.02350 | 0.2197 |
| 0 | 46.4 | 45.8 | 75.50 | 0.8879 | 11.84 | 100.1 | 0.02678 | 0.2189 |
| 5 | 51.3 | 50.7 | 74.95 | 0.9784 | 13.36 | 100.7 | 0.03005 | 0.2181 |
| 10 | 56.6 | 55.9 | 74.39 | 1.076 | 14.89 | 101.2 | 0.03329 | 0.2173 |
| 15 | 62.3 | 61.5 | 73.82 | 1.181 | 16.43 | 101.8 | 0.03653 | 0.2165 |
| 20 | 68.4 | 67.6 | 73.24 | 1.295 | 17.98 | 102.4 | 0.03975 | 0.2158 |
| 25 | 74.9 | 74.1 | 72.65 | 1.416 | 19.54 | 102.9 | 0.04295 | 0.2150 |
| 30 | 81.9 | 81.1 | 72.06 | 1.547 | 21.12 | 103.4 | 0.04615 | 0.2143 |
| 35 | 89.4 | 88.5 | 71.45 | 1.688 | 22.71 | 103.9 | 0.04934 | 0.2137 |
| 40 | 97.4 | 96.5 | 70.84 | 1.839 | 24.31 | 104.4 | 0.05251 | 0.2130 |
| 45 | 105.9 | 104.9 | 70.21 | 2.001 | 25.92 | 104.9 | 0.05568 | 0.2124 |
| 50 | 115.0 | 113.9 | 69.58 | 2.175 | 27.55 | 105.4 | 0.05885 | 0.2117 |
| 55 | 124.6 | 123.5 | 68.93 | 2.361 | 29.19 | 105.9 | 0.06200 | 0.2111 |
| 60 | 134.8 | 133.7 | 68.26 | 2.561 | 30.85 | 106.3 | 0.06516 | 0.2105 |
| 65 | 145.6 | 144.5 | 67.59 | 2.775 | 32.52 | 106.7 | 0.06831 | 0.2098 |
| 70 | 157.1 | 155.9 | 66.90 | 3.005 | 34.22 | 107.1 | 0.07146 | 0.2092 |
| 75 | 169.2 | 167.9 | 66.19 | 3.251 | 35.93 | 107.5 | 0.07461 | 0.2086 |
| 80 | 181.9 | 180.7 | 65.46 | 3.515 | 37.66 | 107.9 | 0.07776 | 0.2079 |
| 85 | 195.4 | 194.1 | 64.72 | 3.799 | 39.41 | 108.2 | 0.08092 | 0.2073 |
| 90 | 209.6 | 208.3 | 63.95 | 4.104 | 41.18 | 108.5 | 0.08409 | 0.2066 |
| 95 | 224.6 | 223.2 | 63.16 | 4.433 | 42.98 | 108.8 | 0.08726 | 0.2060 |
| 100 | 240.3 | 238.9 | 62.34 | 4.787 | 44.80 | 109.0 | 0.09045 | 0.2052 |
| 105 | 256.9 | 255.5 | 61.50 | 5.169 | 46.65 | 109.2 | 0.09365 | 0.2045 |
| 110 | 274.3 | 272.8 | 60.62 | 5.583 | 48.53 | 109.4 | 0.09688 | 0.2037 |
| 115 | 292.6 | 291.1 | 59.71 | 6.031 | 50.45 | 109.5 | 0.1001 | 0.2029 |
| 120 | 311.7 | 310.2 | 58.76 | 6.520 | 52.40 | 109.6 | 0.1034 | 0.2021 |
| 125 | 331.8 | 330.3 | 57.76 | 7.053 | 54.40 | 109.6 | 0.1067 | 0.2012 |
| 130 | 352.8 | 351.3 | 56.71 | 7.638 | 56.44 | 109.5 | 0.1101 | 0.2002 |
| 135 | 374.9 | 373.3 | 55.60 | 8.284 | 58.54 | 109.4 | 0.1135 | 0.1991 |
| 140 | 398.0 | 396.4 | 54.41 | 9.002 | 60.71 | 109.2 | 0.1170 | 0.1979 |